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CONGENITAL CARDIOLOGY SOLUTIONS (ADULT CONGENITAL AND PEDIATRIC CARDIOLOGY)

BIOMARKER ASSESSMENT OF BRAIN INJURY IN THE CARDIAC CATHETERIZATION LABORATORY

ACC Poster Contributions
Ernest N. Morial Convention Center, Hall F
Sunday, April 03, 2011, 10:00 a.m.-11:15 a.m.

Session Title: Pediatric Cardiology: Intervention in Infancy and Outcomes
Abstract Category: 41 Pediatric Cardiology
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Background: Incidence of sub-clinical neurologic injury (NI) during cardiac catheterization (CC) procedures for congenital heart disease (CHD) is unknown. Therefore we used a serum based assay for glial fibrillary acidic protein (GFAP), an exquisitely brain specific biomarker, and indicator of acute NI, to explore whether NI occurs in CC.

Methods: Pre- and post-CC GFAP levels were measured and patient and procedure data was collected prospectively in 104 consecutive patients with a history of CHD and/or orthotopic heart transplantation (OHT). Elevated pre-to-post-CC GFAP was defined as pre below and post above the 95th percentile of normals (0.23 ng/mL).

Results: 6.7% of patients had elevated pre-to-post-CC GFAP (Table). Though not statistically significant, those with vs. without GFAP elevation, on average, had larger percentage interventional procedures, internal jugular access, left heart CC, OHT with CC including endomyocardial biopsy, lesser percentage heparinization, weighed less, and had shorter procedure times. No clinical changes in neurologic status were observed in either group.

Conclusions: The elevation of pre-to-post CC GFAP in this observational study indicated a 6.7% incidence of NI. As we have not established significant contributing factors, ongoing study incorporating other variables e.g. anesthesia, serum glucose, serum pH, contrast dose is warranted to enable risk-stratification of patients and risk-modification of procedure techniques.

Comparison of Characteristics of Patients With and Without Pre-to-Post-CC GFAP Elevation

Patient Characteristics	Total (n=104)	Pre-to-Post Cath Elevation of Serum GFAP (n=7)	No Pre-to-Post Cath Elevation of Serum GFAP (n=97)
Age (years) Median, range	5, 0-79	5, 0.42-10	5, 0-79
Weight (kg) Mean (SD), range	32 (27.2), 1.9-151	21.2 (0.19), 4.3-34	32.8 (27.9), 1.9-151
Procedure Time (hrs) Mean (SD), range	2.5 (1.4), 0.3-7	2.0 (1.1), 0.55-3.2	2.6 (1.5), 0.3-7.0
Cyanotic N(%)	19(18.3)	1(14.3)	18(18.5)
Status-post Heart Transplantation N(%)	33(31.7)	3(42.9)	30(30.9)
Left Heart Cath N(%)	73(70.2)	5(71.4)	72(74.2)
Internal Jugular Access N(%)	47(45.2)	4(57.1)	43(44.3)
Interventional Procedure N(%)	90(86.5)	7(100)	83(85.6)
Heparinized N(%)	81(77.9)	5(71.4)	72(74.2)